Practice Midterm

January 22, 2020

VERSION 1

Name: _____ Student ID#: _____

No calculators allowed! No phones allowed!

INSTRUCTIONS: On your scantron, use a #2 pencil to:

1. **Write and bubble your student ID#**
2. **Write and bubble your exam version**
3. **Write and bubble your last name, and first name, and , if you use one, middle initial. DO NOT USE HYPHENS.**

UNSTARRED MULTIPLE CHOICE QUESTION: Have just one right answer.
STARRED QUESTIONS: May have MORE THAN ONE ANSWER. EXAMPLE: If (a) and (c) are both correct, then bubble in both (a) and (c). If you only bubble in (a) then you will get 0 points for such a starred question.

1. If $P(t) = (2)10^t$ then which of the following numbers represents $P(8)/P(5)$?

   (a) 10
   (b) 100
   (c) 4
   (d) 2,000
   (e) 1,000

2. If $P(t) = 10^t$ then which of the represents dP/dt?

   (a) $t10^{t-1}$
   (b) $log_e(10)10^t$
   (c) $(e/2)e^t$
   (d) 2^t

3. Which describes the tangent line to the graph of $f(x) = x^4 - 4/x$ at the point $(2, f(2))$?

   (a) $y = 31x$
   (b) $y = 33x - 52$
   (c) $y - 14 = 31(x - 2)$
   (d) $y = (4x_0^3 - 4/x_0^2)(x - 2) + 14$
   (e) $(y - 14) = 33(x - 2)$

4. Given that $2^5 = 32$, which of the following represents the 1st order approximation to $31^{1/5}$?

   (a) 2 + 1/5
   (b) 2- 1/16
   (c) 2 - 1/80
   (d) 1.9873

5. (*) What is the derivative of $ln((7x + 2)^5)$?

   (a) $\frac{-35}{(7x+2)^4}$
   (b) $\frac{35}{(7x+2)}$
   (c) $\frac{5}{(7x+2)}$
   (d) $5\frac{d}{dx}ln(7x + 2)$

6. (*) Which is true for the function $f(x) = \frac{x+3}{x+1}$, defined on the domain $x \geq 0$?

   (a) f is monotone decreasing
   (b) there is an x in the domain of f such that $f(x) = 2$.
   (c) there is an x in the domain of f such that $f(x) = 1$
   (d) f is monotone increasing

7. **TRUE or FALSE? There is a quadratic polynomial $p(x)$ for which $p(-3) = 0, p(2) = 0$, $p'(-3) > 0$, and $p'(0) = 0$**

   (a) TRUE
   (b) FALSE

8. **TRUE or FALSE? The following are functions with $f(1) = 30$ and $f(2) = 90$.**

   (a) $10(3^x)$
   (b) $y = 60x - 30$
   (c) $30\cos(2\pi x)$
   (d) $10e^{(log_e 3)x}$

9. **TRUE or FALSE? If $y = e^\pi$ then $y' = \log_e(\pi)e^\pi$**

   (a) TRUE
   (b) FALSE

10. **TRUE or FALSE? If $y = (e^{x/2})^2$ then $y' = 2y$.**

    (a) TRUE
    (b) FALSE

11. (*) $f(x)$ is a differentiable function defined for all real x. In addition $f(0) = 0$ and for all x we have $-1 \leq f'(x) \leq 1$. Then regarding the value $f(x)$ at $x = 2$ we know that :

    (a) $f(2) = 0$
    (b) $-2 \leq -f(2) \leq 2$
    (c) nothing
    (d) $f(2) \geq 0$.

12. Three graphing type-functions: given the graph of the function select the most fitting graph for its derivative.

    (a) you
    (b) make up
    (c) a few
    (d) or look in the text or to section problems

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